

REMARKS

Initially, Applicant would like to express his appreciation to the Examiner for the detailed Official Action provided, for the indication that the drawings as filed are acceptable, and for the acknowledgment of Applicant's Claim for Priority and receipt of the certified copy of the priority document in the Official Action.

Claims 1-9 are currently pending. Applicant respectfully requests reconsideration of the outstanding rejections, and allowance of all the claims pending in the present application.

On pages 2 and 3 of the Official Action, claims 1-3 and 9 were rejected under 35 U.S.C. § 102(a) as being anticipated by KAMIKUBO (U.S. Patent No. 6,178,029).

Applicant respectfully traverses the rejection of claims 1-3 and 9 under 35 U.S.C. § 102(a).

Claims 1 and 9 each include, inter alia, "an imaging optical system that converges the plurality of laser beams deflected by said single deflector on the surface to be scanned; and a beam detector that receives the plurality of laser beams directed to outside of the predetermined imaging area via at least one lens element included in said imaging optical system, . . . an optical characteristic of said imaging optical system being configured such that the laser beams directed to said predetermined imaging area are aligned in a scanning direction, while the laser beams directed to said beam detector are shifted in the scanning direction."

Applicant notes that in the system of KAMIKUBO '029, the compensation prism 25 directs the plurality of beams outside of the imaging area to the detector 20. However, Applicant submits that compensation prism 25 is *not* a part of the "*imaging optical system*" that converges the laser beams on the surface to be scanned, as recited in claims 1 and 9. Instead, compensation prism 25 is a separate optical element which *only* effects beams outside of the imaging area, and does *not* converge beams on the surface during scanning.

Applicant further submits that KAMIKUBO '029 also lacks *an imaging optical system having an optical characteristic configured such that laser beams directed to the imaging area are aligned in the scanning direction, while laser beams directed to the beam detector are shifted in the scanning direction*. Instead, the system of KAMIKUBO '029 includes compensation prism 25, which, as noted above, is *not* a part of the "*imaging optical system*" as defined in the claims. Further, the compensation prism 25 functions to *align* the plurality of beams which are directed to the detector 20 (i.e., the beams are *aligned* in the scanning direction, rather than *shifted* in the scanning direction). In this regard, note column 5, line 4 through column 6, line 48; beam paths L_0 and L_1 in Figure 1; and the position of beam spots B_1 , B_2 at sensor 20 in Figure 3 and at times t_1 , t_2 in Figure 2.

Applicant also submits that dependent claims 2 and 3, which are at least patentable due to their dependency from claim 1, for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record.

Applicant respectfully submits that the rejection of claims 1-3 and 9 under 35 U.S.C. § 102(a) is improper at least for each and certainly for all of the above-noted reasons. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of the allowance of these claims.

On pages 4 and 5 of the Official Action, claims 4-8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over KAMIKUBO (U.S. Patent No. 6,178,029) in view of KAMIKUBO (U.S. Patent No. 6,115,164).

Applicant respectfully traverses the rejection of claims 4-8 under 35 U.S.C. § 103(a).

Initially, Applicant notes that the teachings of KAMIKUBO '164 fail to cure the deficiencies in the disclosure of KAMIKUBO '029 noted above with regard to claim 1. Accordingly, Applicant submits that claims 4-6 are at least patentable due to their dependency from claim 1 for the reasons noted above. Further, claims 4-6 recite additional features of the invention and are also separately patentable over the prior art of record.

In this regard, Applicant submits that, although KAMIKUBO '164 discloses a diffracting surface 15a, it would not have been obvious for one of ordinary skill in the art to provide such a diffracting surface in the system of KAMIKUBO '029, and particularly not to provide a diffracting surface on a lens of an imaging optical system in order to achieve an optical characteristic as recited in claim 1. Applicant submits that there would be no apparent need for such a diffracting surface in a system which already includes a

compensation prism 25. Applicant further submits that providing such a diffracting surface in the system of KAMIKUBO '029 would destroy the teachings of the reference itself, which are directed to providing a compensation prism 25 to *align* a plurality of beams which are directed to a detector. Further still, Applicant notes that KAMIKUBO '164 lacks any teaching of providing such a diffracting surface only in a predetermined area of a lens, as recited in claim 5.

Claim 7 includes, inter alia, "an imaging optical system that converges the plurality of laser beams deflected by said single deflector on the surface to be scanned; and a beam detector that receives the plurality of laser beams directed to outside of the predetermined imaging area via at least one optical element included in said imaging optical system, said imaging optical system having a first range and a second range along a scanning direction, the laser beams directed to said imaging area passing through said first range, the laser beams directed to said beam detector passing through said second range, said imaging optical system being configured such that, within said first range, a lateral chromatic aberration of said imaging optical system is compensated for, and such that within said second range, a lateral chromatic aberration remains so that the plurality of laser beams are separated from each other in the scanning direction."

As noted above, the compensation prism 25 in the system of KAMIKUBO '029 directs the plurality of beams outside of the imaging area to the detector 20. However, Applicant

submits that compensation prism 25 is *not* a part of the "*imaging optical system*" that *converges the laser beams on the surface to be scanned*, as recited in claim 7. Instead, compensation prism 25 is a separate optical element which *only* effects beams outside of the imaging area, and does *not* converge beams on the surface during scanning.

Applicant further submits that KAMIKUBO '029 also lacks *an imaging optical system configured such that lateral chromatic aberration is compensated for in a first range/imaging area, while remaining in a second range/detector area so that laser beams directed to the beam detector are separated in the scanning direction*. KAMIKUBO '029 provides no teaching of chromatic aberration compensation. Further, the system of KAMIKUBO '029 includes compensation prism 25, which, as noted above, is *not* a part of the "*imaging optical system*" as defined in the claims. As noted above, the compensation prism 25 functions to *align* the plurality of beams which are directed to the detector 20 (i.e., the beams are *aligned* in the scanning direction, rather than *separated* in the scanning direction). In this regard, note column 5, line 4 through column 6, line 48; beam paths L_0 and L_1 in Figure 1; and the position of beam spots B_1 , B_2 at sensor 20 in Figure 3 and at times t_1 , t_2 in Figure 2.

Applicant further submits that, although KAMIKUBO '164 discloses a diffracting surface 15a for compensating chromatic aberration, it would not have been obvious for one of ordinary skill in the art to provide such a diffracting surface for compensating chromatic

aberration in the system of KAMIKUBO '029, and particularly not to provide an imaging optical system configured to control chromatic aberration as recited in claim 7. Applicant further notes that KAMIKUBO '164 lacks any teaching of providing for selective chromatic aberration correction, in only a first range/imaging area, as recited in claim 7. Applicant submits that there would be no apparent need for such a diffracting surface for compensating chromatic aberration in a system which already includes a compensation prism 25. Applicant further submits that providing such a diffracting surface for compensating chromatic aberration in the system of KAMIKUBO '029 would destroy the teachings of the reference itself, which are directed to providing a compensation prism 25 to *align* a plurality of beams which are directed to a detector.

Applicant also submits that dependent claim 8, which is at least patentable due to its dependency from claim 7, for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record. For example, the beams which are directed to the detector 20 are *aligned* in the scanning direction, rather than *shifted* in the scanning direction, and thus do not have different timings.

Accordingly, Applicant submits that the rejection of claims 4-8 under 35 U.S.C. § 103(a) is improper at least for each and certainly for all of the above reasons. Applicant respectfully requests reconsideration and withdrawal of the rejection, and an early indication of the allowance of these claims.

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In order to complete the record, Applicant is attaching hereto a copy of Japanese patent document 2000-155277, published on June 6, 2000, which is a patent family member of U.S. Patent No. 6,178,029 to KAMIKUBO (which was submitted in the Information Disclosure Statement filed on March 20, 2002). The Japanese document is listed on a PTO-1449 Form, which is also attached hereto, and which the Examiner is requested to initial and return to Applicant with the next official communication in the present application.


SUMMARY AND CONCLUSION

Reconsideration of the outstanding Official Action, and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate.

Applicant has made a sincere effort to place the present application in condition for allowance and believes that he has now done so.

Should there be any questions or comments, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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